

IN THE CLAIMS:

Please add claims 26-46 as follows:

26. (New) A method for monitoring a vacuum-based process sequentially applied to a stream of substantially identical articles by a processing tool, so as to terminate the operation of the processing tool upon detecting an end-point signal corresponding to a predetermined value of a thickness of a layer of the article being processed, the method comprising:

(a) operating said processing tool to apply said process to the article, while continuously applying an end-point detector to said article under processing;

(b) in response to the end-point signal generated by the end-point detector, completing the processing of said article, and then applying an in-line monitoring by an integrated monitoring tool to the processed article for measuring the thickness value resulting from the processing;

(c) analyzing the measured thickness value, and determining a correction value to be used for adjusting said end-point signal corresponding to the predetermined value of the thickness for terminating the processing of another article in the stream of articles.

27. (New) The method according to Claim 26, wherein said end-point signal is set during the processing of a first article in the stream of articles.

28. (New) The method according to Claim 26, wherein said end-point signal is a predetermined spectrum of light returned from the article.

29. (New) The method according to Claim 26, wherein the determination of the correction value comprises the following steps:

- determining the difference between said predetermined value of the thickness and said measured value;
- determining the ratio of said difference to the processing rate, to determine a time period on which the time processing of the article should be changed to obtain said predetermined value of the thickness;
- determining the value of the end-point signal corresponding to the changed processing time to be used for correcting the end-point signal for processing another article in the stream of articles.

30. (New) The method according to Claim 29, wherein said difference is determined for at least two articles, and an average difference value is used for determining said ratio.

31. (New) The method according to Claim 29, wherein said difference is determined for at least two articles, and an accumulated difference value is used for determining said ratio.

32. (New) The method according to Claim 26, wherein said processing includes a material deposition.

33. (New) The method according to Claim 26, wherein said processing is Chemical Vapor Deposition (CVD).

34. (New) The method according to Claim 26, wherein said processing includes a material removal.

35. (New) The method according to Claim 26, wherein said processing is etching.

36. (New) The method according to Claim 26, wherein said stream of articles includes semiconductor wafers.

37. (New) An end-point detection system for use with a vacuum-based processing tool which is to be sequentially applied to a stream of substantially identical articles, the system comprising:

- (a) an end-point detector accommodated within a working area defined by the processing tool when applied to the article;
- (b) an integrated monitoring tool accommodated within said processing tool outside said working area and capable of measuring a thickness of the article; and
- (b) a control unit associated with the end-point detector and with the integrated monitoring tool, the control unit being in-line operative to be responsive to data coming from the end-point signal for terminating the processing of the article, and to be responsive to the measured data coming from the integrated monitoring tool, so as to analyze these data and determine a correction value to be applied to the end-point signal corresponding to a predetermined value of the thickness of the article achieved by the processing thereof.

38. (New) The system according to Claim 37, wherein said end-point detector utilizes optical means.

39. (New) The system according to Claim 37, wherein said stream of the articles includes semiconductor wafers.

40. (New) The system according to Claim 37, wherein said integrated monitoring tool is capable of spectrophotometric measurements.

41. (New) The system according to Claim 37, wherein said processing includes a material deposition.

42. (New) The system according to Claim 37, wherein said processing is CVD.

43. (New) The system according to Claim 37, wherein said processing includes a material removal.

44. (New) The system according to Claim 37, wherein said processing is etching.

45. (New) A material deposition tool arrangement comprising a processing, to be sequentially applied to a stream of articles, and an end-point detection system, said end-point detection system comprising:

- (a) an end-point detector accommodated within a working area defined by the processing when applied to the article;
- (b) an integrated monitoring tool accommodated within said processing tool outside said working area and capable of applying in-line measurements of a thickness of the article under the material deposition; and
- (c) a control unit associated with the end-point detector and with the integrated monitoring tool, the control unit being responsive to data coming from the end-point signal for terminating the material deposition on the article, and to the measured data coming from the integrated monitoring tool, so as to analyze these data and determine a correction value to be

applied to the end-point signal corresponding to a predetermined value of the thickness of the article achieved by the processing thereof.

46. (New) A material removal tool arrangement comprising a processing, to be sequentially applied to a stream of articles, and an end-point detection system, said end-point detection system comprising:

- (a) an end-point detector accommodated within a working area defined by the processing when applied to the article;
- (b) an integrated monitoring tool accommodated within said processing tool outside said working area and capable of applying in-line measurements of a thickness of the article under the material deposition; and
- (c) a control unit associated with the end-point detector and with the integrated monitoring tool, the control unit being responsive to data coming from the end-point signal for terminating the material removal of the article, and to the measured data coming from the integrated monitoring tool, so as to analyze these data and determine a correction value to be applied to the end-point signal corresponding to a predetermined value of the thickness of the article achieved by the processing thereof.